FACTORS IN LISTENING COMPREHENSION

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MAR 21 1972

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This afternoon, we want to consider the role of listening in the development of the blind child. However, since so few data describing the listening behavior of the visually handicapped are available, it will be necessary to use our knowledge of listening in the development of the sighted child as a frame of reference for our discussion of the visually handicapped. Where data are available for this latter group, comparisons will be made.

First we might ask, what is the role listening plays in the lives of people or, better still, how much time do we spend listening? While no information is available on the blind, some data on the sighted are available.

One study of adults revealed that of the total time spent communicating, they spend

45%	listening
30%	speaking
16 %	reading
9%	writing

In a study of elementary school children, it was found that the median time spent per day in listening was 158 minutes. Interestingly enough, teachers, when asked to estimate the children's listening time, underestimated this by 50%.

I think we can assume that blind children spend a much greater amount of time in listening than do their sighted counterparts.

A question naturally arising from this assumption is: If blind children listen more than sighted children, do they become superior in ability to listen? The evidence here is not clear. In a recent study conducted at Fordham University, sighted children surpassed blind children in listening comprehension for narrative and expositive materials, however, no differences were found among the groups in listening comprehension for other types of materials. Comparison of groups of high school students for listening to story type material showed no differences among blind and sighted in a study conducted by a student at the University of Louisville.
In our own research at the American Printing House, we have sometimes given the STEP Listening Test to groups of visually handicapped students. For groups of blind students enrolled in residential schools, we have found mean listening scores which fall at or slightly above the 50th percentile for grade level. ~~A~~ One group of blind high school students from public schools, who were selected on the basis of having used a recorded textbook during the previous school year, were found to have a mean listening score at about the 86th percentile using norms based on sighted children. Therefore, I think we can say that the listening ability of blind children is just about as good or perhaps a little better than that of sighted children.

The hint that listening comprehension may be different among visually handicapped and sighted children, leads us to wonder if its relations with other variables are the same for the two groups. For sighted children listening comprehension has been found to be positively related to achievement in reading, vocabulary development, spelling, arithmetic reasoning, social studies and science. Our research has revealed a similar pattern of relationships for the blind.

Listening ability among the sighted is related to mental ability to about the same degree as is reading. The case for the blind is similar. Personal adjustment and listening ability appear to go hand in hand for both groups.

What about growth of listening ability? Study of 500 sighted children between the mental ages of 11 and 16 showed steady growth in this ability with a great increase occurring between mental ages 13 and 15. No such data are available for blind children, however, in view of the similarity between the groups up to this point, I believe we can safely assume that in this respect they are also similar.

How do variables like difficulty of material and length of material affect listening comprehension? For the sighted, it has been found that listening comprehension drops off as material becomes more difficult. Research with the blind reveals similar results. There does appear to be an optimum length for messages which would result in highest comprehension. This length would probably vary with the familiarity and difficulty of the message. That a similar case exists for the blind is indicated by our own research which reveals that listening comprehension for long messages is increased when they are presented in several parts.

A very important question is: How do listening and reading compare in comprehension? The answer to this question is of great interest to us at the American Printing House for the Blind. As publishers of textbooks for the visually handicapped, we must try to meet a demand for small numbers of many titles of textbooks.

Our problem is complicated still further by the fact that the small demand for any given title is split between braille and large type readers. If ways could be discovered to make an acceptable recorded textbook, our problems and your problems as teachers would be greatly alleviated. A single recorded book could serve both groups of readers, thereby reducing inventory which is a severe problem for us. Reduction of inventory would allow us to produce a greater number of titles. Production of recorded books in numbers sufficient to supply a market of both braille and large type readers would result in reduction of book costs below the levels for braille and large type.

Well, let's compare reading and listening comprehension. Research on school age sighted children seems to indicate that listening comprehension is superior to reading comprehension in the early grades, that these are about equal during junior high school, and that, at the high school level reading comprehension surpasses that for listening. However, other research conducted with college students and adults indicates that in many instances, listening and reading comprehension are equal and, in the case of meaningful familiar materials, listening comprehension may be superior. Reading comprehension is superior for very difficult materials.. Persons of high mental ability find reading a superior medium while in the low ranges of ability reading and listening are about equal.

Studies comparing listening and reading comprehension of visually handicapped children tend to confirm findings for the sighted.

In our own research program at the American Printing House, we have compared comprehension of groups of elementary and high school students who read or listened to materials taken from the curricular areas of literature, social studies, and science. Both legally blind braille and large type readers were included and the results were the same for both groups. At the elementary levels, comprehension was the same for literature, social studies and science when students read or listened. At the high school level, reading comprehension was superior for literature and social studies. No difference was found between reading and listening comprehension for the science material.

The question of relative comprehension through listening and reading assumes important developmental implications for the blind and sighted only when the relative efficiency of the two modes of communication is considered. By efficiency I mean the relative rate of communication attained per amount of time. At the American Printing House we try to record Talking Books at a rate of 175 words per minute. Let's use this as a standard rate for listening. If we look at the growth curve for reading speeds of the normally sighted, we find that these grow from about 100 wpm at the third grade to about 250 wpm at the 12th grade. At the third grade level, listening is a more efficient mode of communication than reading because the child gets more (175%) information per unit of time. However, by the time the child reaches high school this situation is reversed, with reading becoming the most efficient mode. At the high school level, listening is only 70% as efficient as reading.

Let's look at the growth curves for reading speeds of visually handicapped students. For braille readers, these grow from about 40 wpm at the fourth grade to about 90 wpm at the 12th grade. For large type readers who are legally blind, these grow from about 60 wpm at the fourth grade to 120 wpm at the 12th grade. Therefore, for most blind students reading never becomes as efficient as listening.

In the study just mentioned, we obtained some interesting data on the relative efficiency of comprehension through listening and reading for blind students. What we did was to compare amounts learned per unit of time spent in reading or listening. At the high school level, listening proved to be from 183 to 248 percent more efficient for braille readers and from 155 to 207 percent more efficient for large type readers. At the elementary level, similar ranges were 284 to 360 percent for braille readers and 190 to 250 percent for large type readers. Therefore, it would seem, with respect to the educational development of blind children, that these children can obtain information much more efficiently through listening than reading.

When such a statement as this is made, it is frequently countered with such questions as, Do you mean we shouldn't teach braille? or, Won't emphasis on listening cause a child to lose his braille skills? The answer to both these questions is no. In the first place, research tells us that difficult materials are comprehended best when read, consequently we should continue to put materials such as math and science in braille and large type. In the second place, results of interviews of students who use recorded texts show that, in study, these students tend to take copious notes, thereby bringing into play both listening and braille skills.

When the topic of recorded texts comes up, questions concerning the many problems relative to their use arise. In recent research, where we interviewed high school students who had used recorded texts in at least one subject during the previous year, a number of problems were identified. Among these were the unsuitability of recordings for very difficult material, the poor quality of many recordings, the incompatibility that exists in recordings and playback equipment, the difficulty in place finding, the lack of useful indices, glossaries and tables of content, problems of textbook format, and problems of attending to recordings. Much of our recent research and research planning has been stimulated by our findings from these interviews.

One of the problems raised by students in use of recordings was that of attention. Students reported being unable to attend to recordings after a short initial period of listening. Many reported drowsiness or going to sleep. The fact that they also reported listening from a supine position may have had something to do with this. None of the students reported having been given any instruction in use of recordings for learning.

Now one of the fundamental laws of learning is that active involvement results in more efficient learning than passive involvement. Our interview study indicated that good students who listened frequently stopped their recording to make braille notes. The poorer students lay back and allowed themselves to become submerged in a sea of sound over which they exercised no control. Since this principle of active involvement appeared so critical to successful listening, we decided to test it in a series of experiments.

During this last year six studies employing identical designs were undertaken. Three studies used subjects from the elementary grades and three used high school subjects. Learning of material representing three different curricular areas (literature, social studies, and science) was tested at each grade level. The one hundred twenty students in each study were equally divided among three modes of listening; (1) continuous listening, (2) listening interrupted for 45-second periods at four evenly spaced intervals during which the subjects were instructed to mentally review what he had just heard, and (3) listening interrupted for four minute periods at four equally spaced intervals during which the subject made notes of what he had just heard using a braille writer provided for this purpose. All listening materials were selected for appropriateness for use at the grades involved. The total playing time for each was about 13 minutes. Immediately following listening, all subjects were tested for comprehension on multiple choice tests constructed especially for this purpose. The findings were that students who actively participated in the listening process through periodic mental review or note taking made higher comprehension scores than those students who took only a passive part.

In analyzing the problems involved in using recorded texts, it became apparent that many of these had their origin in the fact that the designs of the equipment and materials the students were using were not based on the requirements for ~~problem of~~ study through listening. In view of this we decided to attempt to develop a system for study in using recorded texts. Our plans call for first analyzing the job of study using recordings and then using this information for the design of the system. Our plans might best be conveyed by reading them as expressed in the project proposal.

We might end discussion of listening in the development of blind children by considering one last question. Can children be trained to listening better? On the face of things it would seem that they could. We have been able to analyze listening to identify its important aspects and to identify the listening behaviors that interfere with comprehension. Yet research results fail to confirm this optimistic view. Results of some studies indicate increases in listening ability from 25-40%, while other studies show no results. In their ambiguity, results from research in listening training closely resemble those from research on training to increase reading rates. It does seem in both areas that motivation is an important ingredient for successful training and that results are more likely to be possible when trainees are selected from groups of low initial skill.